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IS : 10696 - 1983

Indian Standard
SPECIFICATION FOR
ROUND SEGMENT FUSED
BIFOCAL BLANKS

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Indian Standard

SPECIFICATION FOR ROUND SEGMENT FUSED BIFOCAL BLANKS

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(Continued on page 2)

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(Continued on page 8)

Indian Standard

SPECIFICATION FOR ROUND SEGMENT FUSED BIFOCAL BLANKS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 21 October 1983, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 This standard deals with the requirements of round segment, tinted and non-tinted fused bifocal blanks. The requirements of non-tinted ophthalmic glass have been covered in IS : 4382-1967*.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements and tests for round segment, tinted and non-tinted fused bifocal blanks.

2. TERMINOLOGY

2.0 For the purpose of this standard the following definitions in addition to those given under 4.2 of IS : 8260 (Part 1)-1976‡ shall apply.

2.1 Button — Small blank made of flint glass used for fusion into the main blank.

*Specification for non-tinted ophthalmic glass.

†Rules for rounding off numerical values (revised).

‡Glossary of terms relating to ophthalmic lenses and spectacle frames : Part I Ophthalmic lenses.

2.2 Fused Bifocals — A blank in which a button is fused into a segment in the main lens. The glass of the segment has a different refractive index from that of the main lens. The segment side of the combined lens forms one continuous surface when finished.

3. REQUIREMENTS

3.1 Unless otherwise specified in this standard the ophthalmic glass used for the major blank and the other constituent part of the fused bifocal shall conform to the requirements given under 4 of IS : 4382-1967*.

3.2 The inner surfaces of the segments shall be well polished and absolutely free from defects such as waves, scratches, dots, bubbles, marks and similar errors of figures and aberrations which may be observed in inspection by the naked eye (or with spectacles if necessary) under conditions of adequate illumination against a suitable background.

3.3 The glass used shall be such that thermal expansion of the major blank shall completely match with that of the other constituent part of the bifocal.

3.4 Bifocal blanks shall be well annealed after fusion such that the residual strain is minimum and symmetrically distributed. The retardation due to birefringence in blanks caused by strain shall not exceed 20 mm/cm of light path.

3.5 When tested for the transmissivity of white light using a standard photometer, the non-tinted fused blanks shall indicate absorption of not more than three percent of the incident light per centimetre of the light path.

3.6 When seen in reflected light the tinted fused blanks shall not depart significantly in transmission characteristics from the manufacturers or suppliers published figures for the particular material.

3.7 Additional powers in the reading or near vision portion shall be stated in dioptries on the blanks. The curvature of the outer surface shall also be stated in dioptries on the blank.

3.8 Chromatic and other defects which occur at the periphery of the segment shall not be detectable by the eye.

3.9 The diameter of the button shall be not less than 28 mm.

3.10 The centre of depression in the major blank and that of the fused button shall be the same. This shall be checked with the help of a focimeter on a finished lens. When the image of the focimeter is centred, both meridians of the fused portion shall be concentric.

*Specification for non-tinted ophthalmic glass.

3.11 The permissible tolerance on the dioptric power of the reading portion shall be $\pm 0.03D$. This shall be checked with a focimeter on a plano-lens with the given dioptric base.

3.12 From blank to blank the vertical height of the segment shall be 1 to 2 mm below the geometric centre of the main blank.

4. SAMPLING

4.1 Unless otherwise agreed upon between the supplier and the purchaser, the sampling plan as given in Appendix A shall be followed. For further information reference may be to IS : 2500 (Part 1)-1973*.

5. TESTS

5.1 Every blank shall be examined for the presence of surface defects in the fusion zone by either of the tests described in Appendix A of IS : 1400-1960†.

5.2 Fused blanks shall be tested for strain by methods described in 6.2 of IS : 4382-1967‡.

6. MARKING

6.1 Each blank shall be marked with the manufacturer's name or trade-mark; its outer curvature on which it is fused and additional power for reading.

6.1.1 Fused bifocal blanks may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7. PACKING AND PACKAGING

7.1 Each blank shall be wrapped in a paper envelope and information such as type of blank, size, thickness, outer curvature and additional power shall be incorporated on the envelope.

*Sampling inspection tables : Part 1 Inspection by attributes and by count of defects (first revision).

†Specification for optical glass.

‡Specification for non-tinted ophthalmic glass.

7.2 The envelopes containing the blanks shall be packed in a suitable card board box. Not more than 25 pairs or 50 pieces shall be packed in a box.

A P P E N D I X A

(*Clauses 4.1 and 5.1*)

SCALE O-F SAMPLING AND CRITERIA FOR CONFORMITY

A-1. SCALE OF SAMPLING

A-1.1 Lot — In any consignment, all the fused blanks of the same type and manufactured from the same material under essentially similar conditions of manufacture shall be grouped together to constitute a lot.

A-1.2 For ascertaining the conformity of the lot to the requirements of the specification, tests shall be carried out for each lot separately. A number of blanks to be selected at random for this purpose shall be in accordance with col 1 and 2 of Table 1.

A-1.3 In order to ensure the randomness of selection IS : 4905-1968* shall be followed.

A-1.4 If the blanks are packed in different cartons, a suitable number of cartons (not less than 20 percent of the total in the lot subject to a minimum of 2) shall be chosen at random. From each of the cartons so chosen, an approximately equal number of blanks shall be picked up from its different parts so as to obtain the required number of blanks specified in col 2 of Table 1.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 The blanks selected according to A-1.2 and A-1.3 or A-1.4 shall be examined for the requirements given in 3.2, 3.9 3.10, 3.11 and 3.12. If the number of blanks failing to meet one or more of these requirements is less than or equal to the permissible number of defectives given in col 3 of Table 1, the lot shall be declared as conforming to the requirements of these characteristics.

A-2.2 In the case of those lots which have been found satisfactory according to A-2.1, a number of blanks equal to the sample size indicated in col 4 of Table 1, shall be subjected to tests for strain (see 3.4) and transmissivity (see 3.5). Any blank failing to one or more of these requirements shall be considered to be defective.

***Methods for random sampling.**

TABLE 1 SCALE OF **SAMPLING** AND PERMISSIBLE NUMBER OF DEFECTIVES

(Clauses A-1.2, A-1.4, and A-2.2)

NUMBER OF BLANKS IN THE LOT	FOR SURFACE QUALITY, CENTRE OF DEPRESSION, DIOPTRIC POWER AND VERTICAL HEIGHT OF SEGMENT		SAMPLE SIZE FOR STRAIN AND TRANSMISSIVITY TESTS
	Sample Size	Permissible No. of Defectives*	
(1)	(2)	(3)	(4)
Up to 25	5	0	2
26 to 50	a	0	3
51 to 100	13	1	5
101 to 150	20	1	5
151 to 300	32	2	a
301 to 500	50	3	a
501 to 1 000	80	5	13
1 001 and above	125	7	13

*This ensures that lots containing only 2.5 percent or less defectives will be accepted most of the time.

A-2.2.1 If no defectives are found among the blanks subjected to the tests (*see* A-2.2), the lot shall be declared as conforming to the requirements of the specification, otherwise not.

(Continued from page 2)

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